IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TENNESSEE
AT KNOXVILLE

UNITED STATES OF AMERICA,	)	
	)	
Plaintiff,	)	
	)	
v.	)	No. 3:22-CR-68-TAV-JEM
	)	
YAZAN ARAFAT ABDUL-LATIF,	)	
	)	
Defendant.	)	

MEMORANDUM AND ORDER

This case is before the undersigned on Defendant Yazan Abdul-Latif's Motion to Exclude Testimony and Evidence Identifying Seized Material as Marijuana [Doc. 464] and Motion to Exclude Government Evidence and Testimony Identifying Substance as Unlawful Marijuana [Doc. 512]. *See* 28 U.S.C. § 636(b). Defendant Abdul-Latif is charged with conspiring to distribute marijuana and to launder the proceeds and with possession of a firearm in furtherance of drug trafficking [Doc. 146]. Law enforcement seized two hundred pounds of suspected marijuana during the execution of a search warrant at Defendant's residence [Doc. 358 p. 17]. Drug Enforcement Administration ("DEA") Senior Forensic Chemist Alan Randa tested samples of the plant material seized from Defendant's residence and identified the substance as marijuana using three tests, including the DEA's THCSCRN testing method[1] [Doc. 542 pp. 24–28; *see generally* Doc. 346].

Defendant seeks to exclude Mr. Randa's testimony and test results, arguing the DEA's method of testing suspected marijuana cannot reliably distinguish between illegal marijuana and

[1] The THCSCRN method "is a limited purpose method for the separation of cannabinoids" using a gas chromatography-mass spectrometry (GC-MS) instrument to determine whether the concentration of delta-9 tetrahydrocannabinol ("THC") is below or above 1% [Doc. 521-1, Qualitative Separation Method Validation Final Report, p. 1].

legal hemp [Doc. 464 p. 1–2, 5–6, 9, 11–14; Doc. 512 p. 1]. Defendant argues that the DEA's THCSCRN method for identifying marijuana is neither accurate nor reliable because: (1) it is a qualitative test that lacks a calibrator, (2) it does not prevent or account for conversion of cannabidiol ("CBD") to tetrahydrocannabinol ("THC"), and (3) it is not validated, i.e., proven to be a suitable way to determine whether a substance is marijuana [Doc. 512 pp. 2–3; Doc. 552 pp. 2–7]. Thus, Defendant contends that the Court must exclude not only Mr. Randa's testimony and test results but "all alleged marijuana" and "all testimony, documents or any other evidence directly or indirectly identifying, referring or alluding to marijuana" [*Id.* at 2].

The Government responds in opposition, arguing that Mr. Randa has provided expert testimony identifying controlled substances including marijuana on numerous occasions and that the DEA's THCSCRN test, which he employed in this case, is reliable [Doc. 513]. It agrees that the THCSCRN method is qualitative, rather than quantitative, and explains that this method uses an internal standard, rather than a calibrator, to measure whether the TCH in the sample is greater than or less than 1% [*Id.* at 1–2]. It asserts that conversion of CBD into TCH does not occur in its method, which uses "split injections," and that the use of the 4-AP color test guards against a skewed result from a high CBD concentration in the sample [*Id.* at 2–3]. According to the Government, the DEA tested the validity of the THCSCRN method, and in this case, appropriately applied both the THCSCRN method and the standard operating procedures [*Id.* at 4].

After careful review of the parties' filings, the testimony and exhibits, and the relevant law, the undersigned concludes by a preponderance of the evidence that the DEA's THCSCRN method for identifying marijuana is reliable. Accordingly, the Court finds no basis to exclude the testimony of the Government's expert or his test results in this case. Defendant's motions [**Docs. 464 & 512**] to exclude this evidence are **DENIED**.

I. BACKGROUND AND PROCEDURAL HISTORY

On October 24, 2023, the Government filed a notice of intent to use the expert testimony of Senior Forensic Chemist Alan M. Randa, attaching Mr. Randa's curriculum vitae and six laboratory reports identifying plant material attributed to Defendant Abdul-Latif as marijuana [Doc. 346]. For the past twenty-two years, Mr. Randa has worked at the DEA Nashville Sub-Regional Laboratory ("Nashville DEA laboratory") in Nashville, Tennessee [*Id.* at 2]. According to the laboratory reports, Mr. Randa received six samples of plant material on July 28, 2022, and performed three tests on each sample: a 4-aminophenol ("4-AP") color test, a gas chromatography/mass spectrometry ("GC/MS") test, and a macro/microscopic examination of plant material [*Id.* at 4–9]. Mr. Randa has testified as an expert in forensic chemistry and/or the analysis of controlled substances over twenty-one times, including in this Court on April 22, 2022 [*Id.* at 2].

On January 17, 2024, following protracted litigation of pretrial motions and less than seven weeks before the then March 5, 2024 trial date, Defendant moved to compel "discovery of the method used to conclude that the substances tested met the legal definition of marijuana as opposed to lawful cannabis" [Doc. 427 p. 1]. Specifically, Defendant sought to discover the laboratory file "showing [the laboratory's] methods and the validation of those methods" as described in the attached affidavit of Defendant's expert Dr. E. Howard Taylor [*Id.* at 3]. Defendant said informal attempts to obtain the requested information from the Government were unsuccessful [*Id.* at 1].

The Government responded that the Nashville DEA laboratory performed all controlled substance testing in this case [Doc. 447 p. 1 n.1]. It stated that it had previously disclosed all the requested information, some of which is publicly available on the DEA's website, except for the "validation report and data for the THCSCRN method," which it disclosed to Defendant on

January 29, 2024 [*Id.* at 1–2]. According to the Government, it disclosed the DEA's Chemical Analysis Reports on the seized substance from this case on July 14, 17, and 20, 2023, and these reports included "a summary of Senior Forensic Chemist Alan Randa's expert testimony opinion pursuant to Fed. R. Crim. P. 16(a)(1)(G) and cited Defendant to the DEA.gov website for publicly available documents regarding instrumental methods and other information" [*Id.* at 1–2]. In July and early August 2023, and pursuant to Defendant's informal request, the Government also "disclosed the case notes from the DEA laboratory, the DEA chain of custody reports, balance calibration checks, the instrument check logs, the Randa Proficiency Memo and several other documents Defendant requested from the lab" [*Id.* at 2]. Thus, the Government asked the Court to deny Defendant's motion because it had complied with its discovery obligations [*Id.* at 2–3].

In reply, Defendant argued that the Government had not provided "method validation study results" [Doc. 464 pp. 9, 12]. He also moved the Court to exclude "the opinion of the DEA chemist as to the identity of the substance tested" pursuant to *Daubert v. Merrill Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 589 (1993) [*Id.* at 4]. Defendant asserted that the Government failed to demonstrate the testing methods used by the Nashville DEA laboratory are valid, meaning that the test used to identify the cannabis was suitable for its intended purpose [*Id.* at 4, 14]. In this regard, Defendant argued that the test employed by the Nashville DEA laboratory did not quantify the amount of delta-9 THC in the samples and applied heat that converted delta-8 THC into delta-9 THC [*Id.* at 12–13].

In responding to Defendant's new motion to exclude the testimony of Mr. Randa, the Government again affirmed that it had provided all documents responsive to Defendant's discovery requests and, following Defendant's reply, "disclosed additional requested documents including information which the United States believes to be irrelevant to the issues before the

Court regarding the [Nashville] DEA lab[oratory]'s testing of Delta 8" [Doc. 484 p. 1]. The Government argued that its expert disclosure and the attached curriculum vitae and laboratory reports amply demonstrate the relevance and reliability of Mr. Randa's testimony [*Id.* at 3]. According to the Government, Mr. Randa has testified as an expert in analysis of controlled substances over twenty-one times, and "United States District Court Judge Thomas Varlan allowed Senior Forensic Chemist Randa to testify as an expert in the testing of marijuana in this district as recently as April 22, 2022" [*Id.*]. It asserted that Defendant objects only to a portion of Mr. Randa's testing methodology, the GC/MS testing, and Mr. Randa used two other tests, the 4-AP color test and a microscopic examination of the plant material, to identify each of the samples [*Id.* at 4]. The Government maintained Defendant's arguments that additional or different testing is necessary are properly pursued in cross-examination but are not a basis to exclude Mr. Randa's testimony [*Id.*].

The parties appeared before the undersigned on March 27, 2024, for a motion hearing on Defendant's motions to compel discovery and to exclude the testimony of the Government's expert. Assistant United States Attorney Cynthia F. Davidson appeared on behalf of the Government. Attorney Norman Silverman represented Defendant Abdul-Latif, who was also present. At this hearing, Mr. Silverman acknowledged the Government's position that it had provided all information in its possession on the testing of the suspected controlled substances in this case and agreed that considering the Government's representation, his motion to compel discovery was moot [Doc. 499 p. 1]. The Court reset the *Daubert* hearing to July 2, 2024, to allow disclosure of all experts on the testing of controlled substances and consideration of all challenges to these experts in a single hearing [*Id.* at 2]. The Court set deadlines for disclosure of experts, filing of all *Daubert* motions, and further briefing [*Id.* at 3].

On April 26, 2024, Defendant disclosed Dr. Taylor as his expert witness at trial and in any pretrial hearings [Doc. 510 p. 1]. Defendant attached Dr. Taylor's April 24, 2024 expert report [Doc. 510-1] and referred the Court to Dr. Taylor's prior reports previously filed in the record [Docs. 402, 427-1, & 464-2].

On May 24, 2024, Defendant again moved to exclude the testimony of Mr. Randa along with the alleged marijuana and any testimony or references to the plant material being marijuana [Doc. 512 pp. 1–2]. Defendant identified eight "deficiencies" in Mr. Randa's testing methods and procedures:

> (1) the [Nashville DEA] laboratory does not measure percent THC;
>
> (2) there is no calibrator reference standard at the decision point of 1%;
>
> (3) the laboratory confused a calibrator/reference standard with a quality control sample;
>
> (4) the laboratory's reference materials were not certified for making a quantitative determination, (in fact they came with a disclaimer limiting their use to qualitative determinations)[;]
>
> (5) no control was used to exclude conversion of CBD by heat;
>
> (6) no measure of uncertainty was provided;
>
> (7) no evidence of method validation has been provided; [and]
>
> (8) the laboratory failed to follow its own SOP [(standard operating procedures)].

[*Id.* at 2–3 (capitalization removed)]. Defendant asserted that Dr. Taylor's expert report from April 24, 2024 [Doc. 510-1] discusses the scientific basis for each asserted deficiency [Doc. 512 p. 3].

The Government responded in opposition on June 7, 2024, arguing Mr. Randa's opinion is not based on "junk science or flawed analysis" and is admissible expert testimony under Federal Rules of Evidence 702 and 703 [Doc. 513 p. 1]. It asserts that the DEA's THCSCRN testing

method is a qualitative test that measures whether the THC in a sample is more or less than 1% by weight against a "ruler" of an internal standard [*Id.* at 2]. The Government maintains that the THCSCRN method is not quantitative and, thus, does not use or need a "calibrator" [*Id.*]. It maintains that a CBD conversion control is not required, that conversion of CBD to THC only occurs at extremely high heat, and that the DEA test uses a "split injection" process which prevents CBD conversion [*Id.* at 2–3]. Moreover, the 4-AP color test would be negative (turn pink) if the sample contained a high level of CBD [*Id.* at 3]. It contends that the THCSCRN method for identifying marijuana has been validated pursuant to DEA policy and is used in DEA laboratories nationwide [*Id.* at 2–3]. The Government argues that Defendant points to no case law, nor has it located any case, supporting Defendant's assertion that the DEA's testing method is unreliable [*Id.* at 2].

In his reply filed on June 14, 2024, Defendant contends that the Government fails to demonstrate that the substance seized from Defendant's residence is illegal marijuana rather than legal cannabis [Doc. 516 p. 1]. According to Defendant, the Government attempts to substitute a qualitative screening test to arrive at a quantitative determination, which is the percentage of THC in the samples [*Id.*]. Defendant argues that Mr. Randa's conclusory statement that the test he used is valid does not sufficiently demonstrate the validity of the DEA testing methods [*Id.* at 1–2]. Instead, Defendant asserts that *Daubert* requires the Government to offer studies that show the validity of the THCSCRN method, allowing the Court to confirm that the test is reliable and helpful [*Id.* at 2].

Defendant attached the June 11, 2024 letter of Dr. Taylor, responding to Mr. Randa's proposed testimony as reflected in the Government's response and relying on proposed guidelines from the Organization of Scientific Area Committees ("OSAC") [Doc. 516-1]. Dr. Taylor opines

that the percentage of THC in a sample or even the relative percentage of THC (more or less than 1%) in a sample cannot be ascertained without a calibrator, which serves as the "cutoff or decision point" [*Id.* at 2–3]. Dr Taylor also asserts that conversion of CBD to THC during testing is a problem that is "well documented in the scientific literature," and the DEA laboratory has not accounted for this problem "in any validation data or contemporaneously with each run as suggested by [the OSAC guidelines]" [*Id.* at 3–4].

The parties appeared before the undersigned for a *Daubert* hearing on July 2, 2024. AUSA Davidson again represented the Government, and Mr. Silverman represented Defendant Abdul-Latif, who was also present. The Court first addressed Defendant's motion to exclude a DEA method validation report received by defense counsel the day before the hearing [Doc. 542, Transcript, pp. 4–18]. AUSA Davidson explained that she received the Quantitative Separation Method Validation Final Report dated May 9, 2019 (the "master validation report") from DEA's laboratory program manager on July 1, 2024, at 8:20 a.m. [*Id.* at 8; Exh. 1 (copy of email)]. AUSA Davidson said she then voluntarily disclosed the report to defense counsel later that day [*Id.*]. She planned to question Mr. Randa only on the existence of the master validation report, not on its contents [*Id*. at 8, 12–13]. The Court overruled Defendant's objection to any testimony on the master validation report and denied his motion to exclude it but permitted a lengthy recess for Dr. Taylor to review report [*Id.* at 17–18].[2]

The Government presented the testimony of Mr. Randa [*Id.* at 19–92]. Defendant presented the testimony of Dr. Taylor [*Id.* at 93–146]. The Government then recalled Mr. Randa in rebuttal [*Id.* at 147–59].

[2] Additional background and explanation of the Court's ruling on the master validation report is contained in the Court's Memorandum and Order of September 23, 2024, denying Defendant's motion to reconsider its denial of his motion to exclude the report [Doc. 552].

On September 23, 2024, Defendant submitted a post-hearing brief on the reliability of the THCSCRN test considering the master validation report [Doc. 552]. Defendant denies that the OSAC guidelines permit the use of a "control" in place of a calibrator in decision-point tests [*Id.* at 3]. Instead, the control (here a steroid) serves as a check on the calibrator [*Id.* at 4]. He contends a laboratory cannot "determine percent THC without having a calibrator at the decision point" and "without a calibrator[,] there is no yardstick to compare" with the sample [*Id.*]. Defendant attributes the variations between instruments in the master validation report's Appendix A-1 on ruggedness to the absence of a calibrator in the THCSCRN method [*Id.* at 3–4]. He asks the Court to disregard and exclude from trial Mr. Randa's "anecdotal" testimony that the split injector prevents CBD conversion as "unscientific speculation" [*Id.* at 5]. Finally, Defendant asserts that the Nashville DEA laboratory must conduct its own independent validation of the THCSCRN method and cannot rely on the validation testing by other laboratories [*Id.* at 6].

In response [Doc. 554], the Government referred the Court to its prior briefs [Docs. 484, 513, & 539[3]] and the testimony from the July 2, 2024 hearing. Following receipt of these filings, the undersigned took the matter under advisement, and it is now ripe for adjudication.

II. TESTIMONY FROM THE JULY 2, 2024 HEARING

The Government offered the testimony of Alan Merrill Randa, who is a Senior Forensic Chemist for the DEA [Doc. 542 p. 19]. Mr. Randa has worked for the DEA for twenty-two years and currently works in the Nashville Subregional Laboratory [*Id.* at 21, 24].[4] His job duties are to

[3] The Government opposed Defendant's renewed motion to exclude the master validation report, arguing that as proprietary work product of the DEA it is outside the scope of the discovery requirements in Federal Rule of Criminal Procedure 16 [Doc. 539 pp. 1, 8].

[4] Mr. Randa testified that each DEA field laboratory covers a different area of the country [Doc. 542 p. 25]. According to Mr. Randa, one laboratory handles special assignments such as international exhibits and developing testing methods [*Id.*]. He stated that this lab is the one that produced the master validation report for the THCSCRN method [*Id.*].

analyze seized materials for the presence of controlled substances, prepare reports on his findings, assist with seizure of clandestine laboratories, and provide other technical assistance [*Id.* at 19–20]. Mr. Randa has testified as an expert in the identification of controlled substances approximately twenty times [*Id.* at 21]. He estimated that he has tested thousands of controlled substances of during his career [*Id.* at 22]. After testing a substance, he prepares a report, and then another chemist performs a technical and an administrative review of his report [*Id.* at 22]. Following this review, he provides the report to the agent or agency that submitted the substance for testing [*Id.*].

Mr. Randa testified that he tested six seized substances in this case [*Id.* at 24]. For each substance, he weighed it and determined the gross weight and net weight [*Id.* at 27]. He then removed a portion of the plant material and performed a microscopic/macroscopic examination to assess whether the morphology of the plant is consistent with cannabis [*Id.* at 28]. He then performed a 4-AP color test on a portion of the sample [*Id.*]. This test indicates the ratio of cannabinoid to THC in the sample [*Id.*]. Thereafter, Mr. Randa conducted a gas chromatography/mass spectrometry test on the sample [*Id.*]. Mr. Randa stated that to determine that a sample is marijuana, the morphology has to be consistent with marijuana, the 4-AP color test must be blue, which indicates at least three times more THC than CBD is present, and the GC/MS test must indicate that THC is "above the one percent marker that [the laboratory has] as an internal standard" [*Id.*].

Mr. Randa stated that the purpose of the macroscopic/microscopic examination is to confirm that the plant material has the physical characteristics of cannabis [*Id.* at 29]. He explained the purpose of the 4-AP color test is to determine whether the amount of CBD is greater than, less than, or equal to the THC in the sample [*Id.*]. If the 4-AP color test is pink, it means the sample

contains at least three times more CBD than THC [*Id.*]. If the 4-AP color test is blue, it means the sample contains at least three times more THC than CBD [*Id.* at 30]. If the result of the 4-AP color test indicates three times more CBD is present in the sample, he reports the results of the test as inconclusive, regardless of the results on the other two tests [*Id.*]. He only identifies the sample as marijuana if the 4-AP color test is blue, and the other two tests also indicate the substance is marijuana [*Id.*]. Mr. Randa stated that it is the combination of the three tests that allow him to determine whether the sample is marijuana [*Id.* at 31].

Mr. Randa testified that to perform the GC/MS test, he puts the substance into the mass spectrometer, which breaks the substance into its components and produces a pattern that can be compared to an internal standard [*Id.* at 31]. He stated that the peak height of the sample is compared to the peak height of the internal standard, which is set at 1% [*Id.*]. Mr. Randa said an internal standard is a substance typically not found in the material you seek to identify [*Id.*]. The internal standard is "used as a ["one percent"] marker to show a possible concentration" [*Id.* at 32]. Mr. Randa said the 1% marker, which is three times the limit of THC for hemp, is used "to give some wiggle room" to account for the "uncertainty" in the measurement from making the solutions or from the instrument [*Id.*]. He stated that "hemp is any part of the plant that has a THC concentration that is less than 0.3%" [*Id.* at 33].

Mr. Randa stated that the lab does not quantify the amount of THC present in the sample, nor is it required to do so [*Id.*]. He said, if the results of the GC/MS test reveal that the THC in the sample is less than 1%, he states the results as inconclusive, regardless of the results on the other two tests [*Id.* at 34]. Mr. Randa testified that the internal standard is prepared at a specific concentration to represent 1% on the testing instrument [*Id.*].

Mr. Randa testified that the tests he performs go through a technical and administrative review process [*Id.* at 34–35]. The reviewer examines the data to make sure it is consistent with the reported results [*Id.* at 35]. In the technical review, the reviewer also compares Mr. Randa's report to his notes and to the data from the instruments to confirm that he is reporting the results consistently [*Id.* at 35–36]. In the administrative review, the reviewer checks that he is following all the laboratory's standard operating procedures ("SOPs") and its policies [*Id.*]. Mr. Randa stated that here, a senior forensic chemist at the Mid-Atlantic laboratory reviewed and approved his report [*Id.* at 35]. He testified that he followed these same procedures for each of the six reports in this case [*Id.* at 36–37].

Mr. Randa stated that SOPs are established at DEA headquarters to assure that the chemists "accurately and consistently go through the process of identifying something" a substance as either hemp or marijuana [*Id.* at 37]. According to Mr. Randa, SOPs are developed by examining how the DEA laboratories previously analyzed suspected marijuana and how other laboratories test for marijuana and by performing a series of method validations [*Id.* at 38]. He stated that "method validation is a process . . . [to] show that [a particular] set of instrument parameters . . . will do what you want it to do[,] . . . will consistently separate compounds of interest[, will] . . . give[] consistent retention times[,]" and will make a consistent and accurate identification or quantification [*Id.*]. After the method validation, a "ruggedness" assessment is performed in which the test is sent to other DEA laboratories, which perform a validation to determine whether the method is "fit for purpose" [*Id.*]. Following the ruggedness assessment, a report on the method is sent to all the DEA laboratories [*Id.*]. Mr. Randa stated that if an individual laboratory seeks to implement the method, it will perform a "method verification" to assess whether that method with

those parameters works on its instrument and is "fit for purpose" [*Id.* at 39]. Method verification assures that a set of parameters works on a specific instrument [*Id.* at 42].

Mr. Randa testified that in 2019, the DEA changed its process for identifying suspected marijuana after Congress defined hemp as having less than 0.3% THC [*Id.* at 39, 41]. He said the DEA's test was reviewed to assure it conformed to standards set by the scientific working group on drugs [*Id.* at 39–40]. The current test for identifying marijuana went through method validation and is used in DEA laboratories nationwide [*Id.* at 41]. Mr. Randa stated that he is not aware of any court finding the DEA's current testing method to be invalid [*Id.*]. Mr. Randa confirmed that method verification—assuring that the testing method works on a specific instrument—was also done in this case [*Id.* at 42]. Since 2019, the new DEA method for identifying marijuana has been used thousands of times across the United States [*Id.* at 43]. The new test has been subjected to peer review by the DEA laboratories, and the SOPs relating to the test have appeared on the DEA's website since 2022 [*Id.*]. Mr. Randa agreed that the DEA's test to identify marijuana has "gained general acceptance in the relevant scientific community" [*Id.*].

In response to the defense expert's criticism of the DEA's method for identifying marijuana, Mr. Randa testified that the DEA's test is a qualitative, not a quantitative, test [*Id.* at 44]. Regarding the use of a calibrator, Mr. Randa stated that the defense expert is referring to the "wrong part" of the report from the OSAC guidelines,[5] not the type of test that the DEA uses [*Id.* at 45]. Mr. Randa stated that the defense expert was referencing § 9.3.1, which is for decisions point with a one-point comparison, but the DEA's test was described in § 9.3.2, which is decision point with internal standard [*Id*. at 50]. He said the DEA test instead gives "the peak

[5] The report entitled OSAC 2022-S-0014 Building an Analytical Scheme for the Assessment of Tetrahydrocannabinol (THC) is Suspected Marijuana Plant Material Samples was introduced as Exhibit 5 at the July 2 hearing and is attached to Defendant's expert disclosure [Doc. 510-4].

height of the THC [in the sample] compared to the peak height of the internal standard is greater than one[,]" which shows "that the level of THC in the sample is greater than one percent" [*Id.*].

Mr. Randa observed that the OSAC guidelines are a draft of proposed standards and have not yet been adopted [*Id.* at 45]. The OSAC committee is comprised of chemists and toxicologists who work within the forensic sciences community [*Id.* at 46]. Mr. Randa stated that the chairperson of the OSAC committee is the laboratory director for the DEA's Special Testing and Research Laboratory and the vice-chairperson of the OSAC committee also works for the DEA [*Id.* at 48–49]. He identified a third committee member as working in method development at the DEA's Special Testing and Research Laboratory [*Id.* at 49].

Mr. Randa testified that a qualitative method, like the DEA uses, makes a comparison using a direct observation [*Id.* at 51–52]. A quantitative method, on the other hand, measures something [*Id.* at 52]. Regarding the defense expert's claim that the DEA method has no measure of "uncertainty," Mr. Randa stated that the "uncertainty" measurement was determined during the method validation and that at a decision point of 1%, the uncertainty measurement was plus or minus 0.2% [*Id.* at 52–53]. Mr. Randa stated that contrary to the defense expert's critique, the DEA had performed a method validation of its method of identifying marijuana and, in doing so, it followed its own SOPs as well as all the standards for method validation described in the Analysis of Drugs Manual [*Id.* at 53]. He identified the master validation report from the method validation for the DEA method [*Id.* at 55].

Mr. Randa testified that a "calibrator" is essentially a ruler against which something is measured, and, in that sense, the internal standard used by the DEA serves as a calibrator [*Id.* at 54]. He stated that contrary to the defense expert's opinion, a decision point test with an internal standard is a valid method for identifying marijuana and has been validated [*Id.*].

Mr. Randa acknowledged that the OSAC guidelines discussed different procedures for identifying marijuana [*Id.* at 56]. Regarding the issue of conversion of CBD to THC, Mr. Randa stated that he has been told that this does not occur in the DEA's method, and he personally has not observed CBD to THC conversion occurring in using the DEA method [*Id.* at 55].

On cross-examination, Mr. Randa testified that he had not seen all the data upon which the master validation report is based and could only discuss what was in the report itself [*Id.* at 63]. He stated that the Nashville DEA laboratory is inspected and accredited [*Id.* at 66]. Mr. Randa agreed that the 4-AP color test alone was not "conclusive" to identify a sample as marijuana [*Id.* at 67–68]. He also agreed that in the microscopic/macroscopic physical examination, no morphological difference exists between the appearance of marijuana and hemp [*Id.* at 68]. He acknowledged that both the 4-AP color test and the physical examination together are not "determinative" of whether a sample is marijuana [*Id.* at 69].

Mr. Randa stated that when a substance is added to a gas chromatograph, the substance is "volatized and then go[es] through the instrument to the detector" [*Id.* at 70]. The detector represents the substance as a printout with peaks and valleys [*Id.*]. In the case of marijuana, "identification is made by comparison with the mass spec library" [*Id.* at 71]. Mr. Randa stated that the "calibrator in this instance [(i.e., in testing a sample of cannabis)] is the testosterone internal standard" [*Id.* at 72]. He said, "[t]he percentage [of] THC is estimated by the ratio of the height of the peak identified as THC to that of the internal standard" [*Id.* at 73]. He said this method has been reviewed and approved by the Nashville DEA laboratory's accrediting agency but did not know whether it has been peer-reviewed by outside scientists or entities [*Id.* at 78].

Mr. Randa said the plus or minus 0.2% uncertainty rate comes from the master validation report [*Id.*]. He agreed that he was aware that CBD can be converted to THC during heating in a

gas chromatograph [*Id.* at 79]. Mr. Randa said in verifying the DEA GC/MS method for identifying marijuana in the Nashville DEA laboratory, he did not perform the ruggedness or reproducibility testing but did test selectivity, repeatability, and accuracy [*Id.* at 80]. Mr. Randa testified that as far as he is aware, the Nashville DEA laboratory follows the standards and testing procedures stated in the OSAC guidelines [*Id.* at 82–83].

On redirect examination, Mr. Randa affirmed that every DEA laboratory in the country uses the method and SOP that he uses to determine whether a substance is marijuana [*Id.* at 83–84]. He stated that the Tennessee Bureau of Investigation and the Texas Department of Public Safety use a very similar method to identify marijuana [*Id.* at 84].

Mr. Randa said based upon his limited review of the literature, it is possible that some conversion of CBD to THC could occur "within the inlet" of the GC/MS instrument at the temperature the DEA uses, but this occurs if a splitless, rather than a split-injection process, is used [*Id.* at 84–86]. In a splitless-injection process, the entire sample is injected into the inlet and pushed onto the column and, thus, the sample stays at the high temperature for slightly longer [*Id.* at 85]. In a split-injection process, only a portion of the injected sample is pushed onto the column and the rest is split off, thus, limiting the time the sample is in the injector port [*Id.* at 85].

On recross-examination, Mr. Randa admitted that he did not have data to back up his testimony on split versus splitless injections [*Id.* at 89]. He said that he based his testimony on his understanding of how the process works [*Id.*]. He stated that there is no decrease in temperature in a split injection [*Id.*]. Mr. Randa agreed that the 4-AP color test is not conclusive proof that a substance is marijuana, nor even proof to a preponderance of the evidence [*Id.*]. He acknowledged that other substances aside from marijuana could cause the 4-AP color test to turn blue [*Id.* at 90].

Defendant presented the testimony of Dr. Eugene Howard Taylor, who is a forensic toxicologist [*Id.* at 93]. Dr. Taylor's testimony was largely consistent with his written opinion presented to the Court and summarized above [*See* Docs. 510-1 & 516-1]. Dr. Taylor testified regarding his opinion of April 24, 2024 [*Id.* at 101–102; Doc. 510-1]. Accordingly, only portions of Dr. Taylor's testimony at the July 2 hearing are highlighted here.

Dr. Taylor testified that in addition to his work in forensic toxicology, he has worked as an inspector for "federally-certified workplace drug testing laboratories" and previously ran his own laboratory that conducted workplace drug testing [Doc. 542 p. 98]. He has also testified frequently as an expert for both the prosecution and the defense in military cases [*Id.* at 98–99]. His expert testimony has never been excluded [*Id.* at 100]. Dr. Taylor stated that he has tested and analyzed delta-9 THC in biological fluids and samples for over forty years [*Id.*].

Dr. Taylor stated that the OSAC guidelines "are a set of proposed guidelines that have been adopted by the scientific community" [*Id.* at 103]. He stated that while the OSAC guidelines are not binding, they are "the most extensively peer-reviewed set of guidelines . . . for how marijuana should be . . . analyzed" [*Id.* at 104]. Dr. Taylor described the OSAC guidelines as presenting the "best practice[s]" [*Id.* at 143].

Dr. Taylor said one problem with the DEA's testing method is that it does not use a calibrator at the decision point but, instead, compares THC to testosterone [*Id.* at 105–06]. He stated that the DEA test merely compares a set of numbers—the THC in the sample to the internal standard of testosterone—and "that ratio needs to be compared to a known reference material" [*Id.* at 108]. Dr. Taylor disagreed that the OSAC guidelines permit a qualitative decision point test without a calibrator, stating that all of subsection nine applies to that type of test [*Id.* at 117–18].

Dr. Taylor also testified about the master validation report [*Id.* at 118–122, 126–127]. He stated that each laboratory must perform its own independent validation of a testing method and cannot rely on a validation performed by another laboratory [*Id.* at 118]. According to Dr. Taylor, an independent validation is necessary to calibrate the instruments in that laboratory, and each laboratory should conduct a "re-verification" yearly [*Id.* at 119, 121]. He stated that without the data underlying the master validation report, he cannot evaluate the propriety of the method validation [*Id.* at 121]. Dr. Taylor opined that each laboratory must also establish its own "uncertainty" level [*Id.* at 126]. He stated that the Nashville DEA laboratory is not following the DEA's own SOPs, which require that each laboratory validate its methods, because Mr. Randa's method verification was incomplete and did not include reproducibility testing [*Id.* at 127–28].

Regarding conversion of CBD to THC at high temperatures, Dr. Taylor testified that "[a]s CBD is heated it is spontaneously converted into delta-9 THC" and, as required by the OSAC guidelines, a CBD conversion control must be used during a GC/MS test [*Id.* at 125].

On cross-examination, Dr. Taylor stated that he has never testified in a federal district court, only in military courts [*Id.* at 130]. He stated that he has never analyzed plant material, but he has analyzed controlled substances in pill or powder form [*Id.* at 131]. Dr. Taylor stated that when testifying as an expert in military court, he reviews the analysis and testing performed by others, but he does not test the drugs related to the military cases [*Id.* at 133]. He stated that he has never testified as an expert on seized drugs or in case like this one in which the parties disagreed about results of drug testing [*Id.* at 136].

Dr. Taylor confirmed that he has not tested any seized drugs in this case [*Id.*]. He agreed that he does not know whether the plant material seized in this case is marijuana [*Id.* at 137]. Dr. Taylor testified that he is being paid $5,000 per day to testify in this case and $500 per hour to

review documents *[Id.*]. He estimated that he has spent approximately twenty hours working on this case [*Id.*].

Dr. Taylor stated that the OSAC guidelines are not a draft but are "in the final adjudication stage" before they are placed on the OSAC registry [*Id.*]. He acknowledged that even once placed on the OSAC registry, the guidelines are not binding [*Id.* at 138]. He characterized the OSAC guidelines as the "recommendation of the vast majority of scientists in the United States who do THC analysis" [*Id.*]. He said adjudication of comments on the guidelines is the final stage before adoption of the guidelines [*Id.*]. Dr. Taylor disagreed that Sections 9.3.1 and 9.3.2 of the OSAC guidelines were alternative ways of performing a qualitative decision point test [*Id.* at 141]. Instead, he maintained that all of part 9.3 required a calibrator [*Id.*]. Dr. Taylor agreed that the OSAC guidelines recommended but did not require use of a CBD conversion control [*Id.* at 143]. He stated that the entirety of the OSAC guidelines states the best practices [*Id.*].

Dr. Taylor testified that a method verification or a mini validation does not require checking all aspects of the original validation [*Id.*]. He stated that he has never certified a DEA laboratory [*Id.*].

On redirect examination, Dr. Taylor explained that the adjudication phase is when the OSAC committee considers all the comments and potentially edits the guidelines in response [*Id.* at 145].

The Government recalled Mr. Randa in rebuttal. Mr. Randa testified that a method can be validated at any laboratory but must be verified at the laboratory where it is used [*Id.* at 149]. This is because a testing method is simply a set of parameters to use with a testing instrument and those same parameters can be used on the same type of instrument at another laboratory [*Id.*]. When using a new set of parameters, they must be verified for use on that instrument [*Id.*]. Mr. Randa

stated that the OSAC guidelines discuss an inlet temperature of 250 degrees centigrade, and based upon the recommendation of the guidelines, no or little conversion of CBD to THC occurs at that temperature [*Id.* at 150].

Defense counsel questioned Mr. Randa on the DEA's procedure for method validation [*Id.* at 158]. Mr. Randa testified that the Special Testing and Research Laboratory in Virginia, not the Nashville DEA laboratory, validates the methods and testing used at the DEA laboratories [*Id.*]. He stated that "[o]nce a method has been okayed, then approved, it is then sent out to the rest of the DEA laboratories where they run a mini validation or a method verification to show that that set of parameters on that instrument will provide a similar result as what was done in the method validation" [*Id.*].

III. MASTER VALIDATION REPORT

The master validation report appears in the record as an attachment to Defendant's initial amended motion to exclude [Doc. 521-1]. It is entitled the Office of Forensic Sciences Qualitative Separation Method Validation Final Report–SFL1 and dated May 9, 2019 [*Id.* at 1]. The report reviews the "THCSCRN method," which "is a limited purpose method for the separation of cannabinoids" using a gas chromatography-mass spectrometry ("GC/MS") instrument (the "DEA 741858 instrument") at the Special Testing and Research Laboratory in Dulles, Virginia [*Id.*]. The report concludes that the THCSCRN separation method performed on the DEA 741858 instrument is "suitable for its intended purpose" of "assessing whether the concentration of [delta-9 THC] is below or above 1% (w/w)" [*Id.*]. The nineteen-page report summarizes the data from solution preparation and validation results in a series of charts [*Id.* at 2–18]. The copy of the report provided to Defendant does not contain the supplemental validation data, which the report states is contained in Appendix A [*Id.* at 18].

Three appendices are attached to the master validation report [*Id.* at 20–53]. Appendix A-1 is a fifteen-page report dated January 17, 2020, and signed on January 27, 2020, and is a "supplemental report present[ing] a summary of the ruggedness evaluation completed for the THCSCRN method after its transfer to the DEA regional laboratories" [*Id.* at 20]. "For the purpose of this report, ruggedness refers to the general performance of this method across different laboratories, instruments, operators, and under variable environmental conditions" [*Id.*]. Appendix A-1 summarizes the results from testing of the THCSCRN method at seven regional DEA laboratories (plus the Virginia DEA laboratory) on eighteen GC/MS instruments and "demonstrate[s] the validity and reliability of the THCSCRN method across DEA laboratories" [*Id.*]. The link to "[t]he Ruggedness Data Analysis Summary spreadsheet and the validation data collected throughout the field laboratories" is redacted [*Id.* at 34].

Appendix A-2, an eight-page report dated October 22, 2019, and signed December 9, 2019, is the "[f]inal report for the evaluation of testosterone as an alternative internal standard (IS) for use with the THCSCRN method" [*Id.* at 35]. The previous tests of the THCSCRN method used a solution containing androstene as the IS, but the report states that "availability of this compound may be limited in the future due to the costs associated with high-purity materials" [*Id.*]. Appendix A-2 summarizes "the evaluation of testosterone as an alternative IS" [*Id.*] The report concludes that the "data and results presented in this report demonstrate that testosterone is suitable as an alternative internal standard for the THCSCRN method" [*Id.* at 42]. The link to "[a]ll the data compiled during this evaluation" is redacted [*Id.*].

Appendix A-3, an eleven-page report dated March 15, 2021, and signed on April 21, 2021, "summarizes a re-evaluation of the THCSCRN method data collected during the original validation performed during the spring of 2019," examining the "peak area ratios" as compared to

the "peak height ratios evaluated during the original validation" [*Id.* at 43]. This report concludes that analyzing peak height is preferable to peak area because it is more efficient, is "less affected by closely eluting compounds," and can indicate "early signs of instrument degradation" alerting the operator to the need for maintenance on the instrument [*Id.* at 52–53]. The link to "[a]ll the data compiled during this evaluation" is redacted [*Id.* at 53].

III. ANALYSIS

"Federal Rule of Evidence 702 obligates judges to ensure that any scientific testimony or evidence admitted is relevant and reliable." *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 147 (1999) (quoting *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 589 (1993)). Rule 702 provides:

> A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if the proponent demonstrates to the court that it is more likely than not that:
>
> (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
>
> (b) the testimony is based on sufficient facts or data;
>
> (c) the testimony is the product of reliable principles and methods; and
>
> (d) the expert's opinion reflects a reliable application of the principles and methods to the facts of the case.

Fed. R. Evid. 702.[6] A district court evaluating evidence proffered under Rule 702 must act as a gatekeeper, ensuring "that any and all scientific testimony or evidence admitted is not only relevant, but reliable." *Daubert*, 509 U.S. at 589.

[6] Rule 702 was amended on December 1, 2023. The Court utilizes the current version of Rule 702 because it governs "insofar as just and practicable, all proceedings then pending." Prop. Ams. to the Fed. R. Evid., 344 F.R.D. 850, 851. *See also United States v. Candelaria*,

The factors relevant in evaluating the reliability of the testimony include: "whether a method is testable, whether it has been subjected to peer review, the rate of error associated with the methodology, and whether the method is generally accepted within the scientific community." *Coffey v. Dowley Mfg., Inc.*, 187 F. Supp. 2d 958, 970–71 (M.D. Tenn. 2002) (citing *Daubert*, 509 U.S. at 593–94), *aff'd*, 89 F. App'x 927 (6th Cir. 2003). The inquiry is "a flexible one," and these factors are not a definitive checklist or test. *Kumho Tire Co.*, 526 U.S. at 138–39 (citing *Daubert*, 509 U.S. at 593); *see also Heller v. Shaw Indus., Inc.*, 167 F.3d 146, 152 (3d Cir. 1999) (explaining that these factors "are simply useful signposts, not dispositive hurdles that a party must overcome in order to have expert testimony admitted").

"Although *Daubert* centered around the admissibility of scientific expert opinions, the trial court's gatekeeping function applies to all expert testimony, including that based upon specialized or technical, as opposed to scientific, knowledge." *Rose v. Sevier Cnty.*, No. 3:08-CV-25, 2012 WL 6140991, at *4 (E.D. Tenn. Dec. 11, 2012) (citing *Kumho Tire Co.*, 526 U.S. at 138–39). "[A] party must show, by a 'preponderance of proof,' that the witness will testify in a manner that will ultimately assist the trier of fact in understanding and resolving the factual issues involved in the case." *Coffey*, 187 F. Supp. 2d at 70–71 (quoting *Daubert*, 509 U.S. at 593–94). The party offering the expert has the burden of proving admissibility. *Daubert*, 509 U.S. at 592 n.10.

No. 22-CR-767 KWR, 2023 WL 8185932, at *1 n.1 (D.N.M. Nov. 27, 2023) (applying amendment before the effective date of the amendment because the trial was scheduled to occur after the effective date); *Andrews v. Brethern Mut. Ins. Co.*, No. 4:19-cv-01107, 2023 WL 660710, at *6 (M.D. Pa. Oct. 12, 2023) (taking "heed of the forthcoming changes so as to avoid the misapplication of Rule 702 identified by the Advisory Committee"). But the result would be the same regardless of whether the Court applied the current or prior version of Rule 702. The changes to the rule are not substantive. *Nash-Perry v. City of Bakersfield*, No. 118CV01512JLTCDB, 2023 WL 8261305, at *13 (E.D. Cal. Nov. 29, 2023). Rather, "[t]he amendment clarifies that the preponderance standard applies to the three reliability-based requirements added in 2000—requirements that many courts have incorrectly determined to be governed by the more permissive Rule 104(b) standard." Fed. R. Evid. 702 advisory committee's note to 2023 amendments.

"District courts generally have 'considerable leeway in deciding in a particular case how to go about determining whether particular expert testimony is reliable.'" *Madej v. Maiden*, 951 F.3d 364, 374 (6th Cir. 2020) (quoting *Kumho Tire*, 526 U.S. at 152). Decisions by the district court are thus reviewed for an abuse of discretion. *See id.* (citing *Kumho Tire*, 526 U.S. at 142). "This deferential standard makes sense because *Daubert* establishes a 'flexible' test that considers many indicia of reliability[,]" and relevance will depend "on the particular science and the particular scientist before the court." *Id.* (citing *Kumho Tire*, 526 U.S. at 150).

Turning to the facts of this case, the Court begins by observing that the difference between illegal marijuana and lawful cannabis is the percentage of delta-9 THC in the substance. *See* 21 U.S.C. § 802(16)(A)–(B) (defining marijuana as any part of or derivative from the cannabis plant that is not including hemp under 7 U.S.C. § 1639(o)); *see also* 7 U.S.C. § 1639o(1) (defining hemp as any part of the cannabis plant and "all derivatives, extracts, cannabinoids, isomers, acids, salts, and salts of isomers, whether growing or not, with a delta-9 tetrahydrocannabinol [("THC")] concentration of not more than 0.3 percent on a dry weight basis"). "Marijuana and any part of the plant *Cannabis sativa L.* with a delta-9 THC concentration above 0.3 percent are Schedule I controlled substances." *Northern Va. Hemp & Agriculture LLC v. Virginia*, 1:23-cv-1177, 2023 WL 7130853, at *1 (E.D. Va. Oct. 30, 2023) (citing 21 U.S.C. §§ 812, Schedule I, (c)(10), (17)) (appeal filed Nov. 15, 2023). The Government's expert, Senior Forensic Chemist Alan Randa, performed three tests—the 4-AP color test, a physical macro/microscopic examination, and a GC/MS test using the THCSCRN method—on six samples of plant material and identified each as marijuana [Doc. 346 pp. 4–9].

For the reasons discussed below, the DEA's three-part testing method for the identification of marijuana is reliable, and Mr. Randa's testimony and test results are admissible at trial.

A. Defendant's Argument

Defendant asks the Court to exercise its gatekeeping function to exclude the testimony and test results of the Government's expert because the DEA's THCSCRN method for distinguishing legal hemp and illegal marijuana is not reliable [Doc. 464 pp. 4, 12–14; Doc. 512 p. 1]. Defendant identifies three primary problems with the THCSCRN method: (1) it is a qualitative, rather than a quantitative test, that does not use a calibrator,[7] (2) it contains no check on the conversion of CBD to THC at high heat, and (3) it was not properly validated[8] because validation studies performed by a different DEA laboratory do not assure the validity of the test performed by Mr. Randa [Doc. 512 pp. 2–3; 552 pp. 2–7].

1. Qualitative Test

Defendant first faults the THCSCRN test because it is a qualitative test, even though it purports to determine whether the percentage of THC in the sample is over 1% [Doc. 552 p. 2]. Defendant characterizes the THCSCRN as a "screening test" rather than a test that will determine the percentage of THC in the sample, which he contends is necessary to identify the sample as marijuana [Doc. 516 p. 1]. Defendant's expert Dr. Taylor agrees that the sole way to distinguish between hemp and marijuana "is by quantitative or semi-quantitative analysis of delta 9 THC" [Doc. 510-1 p. 3]. Dr. Taylor states that the THCSCRN method is "neither accurate nor reliable and does not even measure what the laboratory claims (percent of [m]arijuana by dry weight)"

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[7] Defendant lists eight "deficiencies" in the DEA testing method [Doc. 512 pp. 2–3]. The Court groups the first through fourth and the sixth as relating to the DEA's use of a qualitative test without a calibrator.

[8] Defendant's eighth alleged deficiency is that the DEA laboratory failed to follow its own standard operating procedures [Doc. 512 p. 3]. Defendant's expert summarizes this shortcoming as the DEA laboratory having "no validation data as required in the Quality Assurance SOP" [Doc. 510-1 p. 11]. The Court analyzes this alleged deficiency as a part of Defendant's argument about the lack of validation for the THCSCRN method.

[*Id.*]. Dr. Taylor identifies several problems with the accuracy and reliability of the THCSCRN method: (1) it fails to measure the percentage of THC in the sample, (2) it does not use a calibrator against which to measure the THC in the sample; (3) it confuses a calibrator or reference standard with a quality control sample, (4) it does not use a certified reference material with a known and verifiable purity rate, and (5) it contains no measure of the "uncertainty" or accuracy/precision of the test [*Id.* at 3–6, 9; *see also* 552 pp. 2–7].

The testimony of Mr. Randa and the OSAC guidelines, however, reveal that the THCSCRN properly tests whether the THC in a sample is more or less than 1%. Mr. Randa testified that the OSAC guidelines are standards proposed by a committee of chemists and toxicologists who specialize in testing seized drugs and that these proposed standards have not yet been adopted [Doc. 542 pp. 45–46]. He stated that the DEA's test does not use a calibrator that is separate from the internal standard, here testosterone, and the internal standard serves as the ruler against which the peak height of the sample is measured [*Id.* at 51, 54, 72]. He acknowledged that the DEA's test does not give the percentage of THC in the substance but, instead, tells whether the percentage of THC in the substance is greater than 1% [*Id.*].

Moreover, Mr. Randa states that the OSAC guidelines, which Defendant introduced as evidence of accepted testing methods in the scientific community, show that a calibrator is not required to determine whether the percentage of THC is above or below 1% [*Id.* at 44–45 & 150]. The Court agrees. The OSAC guidelines state that testing methods must use either a quantitative analysis or "a decision point analysis" to differentiate hemp from marijuana [Doc. 510-4 § 4.1.1, at 4]. The OSAC guidelines recognize that a "qualitative analysis of *Cannabis* samples using a decision point threshold can be performed in a number of ways" [*Id.* at p. 10 § 9.1]. The OSAC guidelines then describe two of those methods as a decision point analysis using an internal

standard such as testosterone as the cutoff value for the decision point [*id.* §§ 9.2.4 & 9.5.2, at 11–12] and a decision point analysis using a calibrator in addition to an internal standard [*id.* §§ 9.3.1.1 & 9.5.1, at 11–12]. Although Defendant insists that it would be "absurd" to use an internal standard in place of a calibrator [Doc. 552 p. 3], the OSAC guidelines state that "[i]f analysis is performed using a decision point with internal standard, calculate the ratio of sample THC to internal standard using either peak area or peak height" [Doc. 510-4 § 9.5.2, at 12]. The OSAC guidelines affirm the THCSCRN method is a valid method for distinguishing marijuana from hemp.

Finally, while Dr. Taylor contends that the THCRNSC method contained no "measure of uncertainty," Mr. Randa testified that the level of "uncertainty" was established during the method validation [Doc. 542 pp. 51, 53]. He stated the "uncertainty" is plus or minus 0.2% [*Id.* at 53, 78]. Moreover, the OSAC guidelines state that "[q]ualitative methods can have an 'uncertainty measurement' (error rate); however, no uncertainty value is given for samples" [Doc. 510-4 § 11.1.2, at 14].

2. CBD Conversion

Defendant next challenges the THCSCRN method because it contains no check on the potential conversion of CBD to THC when heat is applied [Doc. 464 pp. 12–14; Doc. 512 p. 3; Doc. 552 pp. 5–6]. Dr. Taylor asserts that CBD and THC are "very similar in structure" and that the problem of high heat converting CBD to THC during GC/MS is "well known" [Doc. 510-1 p. 7]. According to Dr. Taylor's opinion, "forensic standard[s]" require the use of a "CBD conversion control to verify that the method does not produce THC" [*Id.* at 8].

At the hearing, Dr. Taylor acknowledged that the OSAC guidelines do not require use of a CBD conversion control, instead they only recommend one as a best practice [Doc. 542 pp. 142–43]. Mr. Randa testified that he has been told the DEA test does not cause conversion of CBD to

THC, and he has not observed CBD converting to THC in the DEA's method [*Id.* at 55]. He agreed that CBD conversion could occur at the temperature the DEA uses, however, conversion occurs when the method uses a "splitless" rather than "split injection" [*Id.* at 85]. According to Mr. Randa, "a splitless injection means that when you inject the sample into the inlet, all of the sample gets pushed into the column[and, thus,] all of it stays at [that] temperature a little bit longer" [*Id.*]. In contrast, with a split injection, "only a portion of what you inject gets put onto the column [and] the rest of it gets split off" [*Id.*]. Mr. Randa believes the split injection process prevents CBD conversion because the sample is held and heated in the inlet for a shorter time [*Id.* at 86].

The OSAC guidelines state that "[i]t is possible for cannabinoids to interconvert to some extent under different conditions" and this issue should be monitored during validation and "when necessary during analysis of casework" [Doc. 510-4 § 13.2, at 16; *see also id.* § 9.3.1.2 ("Because of potential conversion of CBD to THC in the GC injection point when the sample is analyzed underivatized, procedures that use GC with no derivatization *should include* a CBD conversion control." (emphasis added))]. The OSAC guidelines recognize that the different means of testing cannabis, such as the 4-AP color test and the quantitative decision point test, can corroborate each other [*Id.* § 6.3, at 4]. Here, the Government argues that the 4-AP color test, which changes color in the presence of CBD, would identify a sample containing a large amount of CBD. Thus, while the THCSCRN method does not use a CBD conversion control, other parts of the DEA tests, such as the split injection process and the use of the 4-AP color test reduce the potential for CBD conversion or alert the chemist to this potential issue.

Defendant argues that if the Court allows Mr. Randa to testify, it should exclude his opinions on the split injection process, which are anecdotal and based on his own experimentation, and as such, do not conform to the scientific process [Doc. 552 p. 5]. Mr. Randa is trained in

maintenance and troubleshooting on GC instruments and has had "Gas[] Chromatography Inlet Training" [Doc. 346 p. 2]. His job as a DEA Senior Forensic Chemist involves use of the GS/MS equipment [*Id.*], and he testified that he has performed thousands of tests to identify controlled substances [Doc. 542 p. 22]. The Court finds that Mr. Randa is qualified to testify about the split injection process on the GC/MS instruments at the Nashville DEA laboratory based upon his training and experience.

3. Validation

Defendant contends the THCSCRN method is not reliable because it was not properly validated [Doc. 512 p. 3]. Prior to the *Daubert* hearing, Dr. Taylor opined that the Nashville DEA laboratory "does not have any validation data or studies to support the accuracy or reliability of a 1% decision point to determine the THC content in unknown samples" [Doc. 510-1 p. 9]. Dr. Taylor references the standard operating procedures of the DEA laboratory from the DEA's website but opines that the Nashville DEA laboratory has not complied with these procedures because the Government has not produced data from the THCSCRN method relating to precision (i.e., "reproducibility"), the relative standard deviation over a five week period, "linearity" (the evaluation of "'THC Reference Material' at different concentrations"), the accuracy assessment, or "ruggedness" with regard to the conversion of CBD to THC [*Id.* at 10].

The Government produced the master validation report for the THCSCRN method the day before the *Daubert* hearing [*See* Doc. 549 p. 6]. Mr. Randa testified about the DEA's procedure for method validation [Doc. 542 p. 158]. He stated that the Special Testing and Research Laboratory in Virginia, not the Nashville DEA laboratory, validates the methods and testing used at the DEA laboratories [*Id.*]. He stated that "[o]nce a method has been okayed, then approved, it is then sent out to the rest of the DEA laboratories where they run a mini validation or a method

verification to show that that set of parameters on that instrument will provide a similar result as what was done in the method validation" [*Id.*]. Mr. Randa testified that the Nashville DEA laboratory performed the method verification on the THCSCRN method [*Id.* at 42, 80–81].

The Government also represented that it provided the data from the "***2022*** THCSRN Method Validation Report to defense counsel on January 29, 2024 [Doc. 539 p. 3]. "The previously provided 2022 THCSCRN Validation Report outlines the validation procedure used in the sub-regional laboratory used by the government's proposed expert, Senior Forensic Chemist, Alan Randa" [*Id.* at 4]. At the July 2 hearing, Government's counsel stated that all the validation studies performed by the Nashville DEA laboratory were previously provided to the defense [Doc. 542 pp. 57–58].

Defendant still contends that the THCSCRN was not properly validated because the validation process occurred at the Special Testing and Research Laboratory in Virginia, rather than at the Nashville DEA laboratory [Doc. 552 pp. 6–7]. He maintains that every laboratory must independently validate all tests [*Id.* at 6]. Defendant asserts that the differences in results among the DEA regional laboratories participating in the validation process reveal the problem with off-site validation [*Id.* at 6–7]. Defendant cites to an appendix of the master validation report commenting on differences in "acquisition time windows" and other metrics between laboratories, which the report attributes to different settings on the GC/MS instruments at the different laboratories [*Id.* at 7 (quoting Doc. 521-1 (Appendix A-1 on Ruggedness, pp. 8–9)].

Here, the THCSCRN method was validated first by the Special Testing and Research Laboratory in Virginia. Then, the method was sent for testing in the seven regional laboratories. After this testing confirmed the validity of the THCSCRN method, each individual DEA laboratory conducted a "mini validation" of the THCSCRN method on its own instruments.

B. Reliability

To determine whether the plant material seized from Defendant Abdul-Latif's residence was marijuana, Mr. Randa performed three tests on each sample of the plant material: the 4-AP color test, a macro and microscopic physical examination of the sample, and a GC/MS test using the THCSCRN method. Defendant objects to the reliability of one-third of the identification procedure, the THCSCRN method, arguing that it is not reliable, meaning suitable, to distinguish marijuana from legal hemp. A non-inclusive list of factors relevant to reliability are "whether a method is testable, whether it has been subjected to peer review, the rate of error associated with the methodology, and whether the method is generally accepted within the scientific community." *Coffey*, 187 F. Supp. 2d at 970–71. All of these factors show the THCSCRN method to be reliable.

The THCSCRN method is testable and has been subjected to peer review. It has been tested by the Special Testing and Research Laboratory in Virginia, all the regional DEA laboratories, and each individual DEA laboratory, including the Nashville DEA laboratory. The Special Testing and Research Laboratory developed a rate of error associated with the THCSCRN method, which is plus or minus 0.2%. The decision point of 1% accounts for that margin of error. Finally, the scientific community generally accepts qualitative decision point tests using an internal standard but no calibrator, as evidenced by the OSAC guidelines including this type of test as one of the listed options.[9]

In accord with Rule 702, Mr. Randa's scientific, technical, and specialized knowledge in the field of forensic testing and substance identification will assist the jury in determining whether

[9] Also, in this regard, the Court observes that Mr. Randa has testified as an expert over twenty times and testified as an expert on the identification of marijuana in this Court in 2022 [Doc. 346 p. 2]. *See United States v. Cornelius*, 3:19-CR-220, Doc. 747 pp. 64–71 (E.D. Tenn. Apr. 22, 2022) (Mr. Randa described use of the 4-AP color test, physical examination, and the GC/MS test to determine that substance was marijuana).

the substance seized from Defendant's residence was illegal marijuana. Fed. R. Evid. 702(a). His opinions and laboratory results are based on sufficient facts, that is, the tests performed on the samples of suspected marijuana. Fed. R. Evid. 702(b). Mr. Randa's proposed testimony and laboratory results are the product of reliable testing methods and reflect a reliable application of the testing methods to the samples of plant materials in this case. Fed. R. Evid. 702(c) & (d). The undersigned finds that a preponderance of the evidence in the record supports each of these findings. Accordingly, Mr. Randa's testimony and laboratory results are admissible under Rule 702 and the principles outlined in *Daubert* and its progeny and pass through the gate.

IV. CONCLUSION

After careful consideration of the parties' arguments, the relevant law, and the record in this case, the undersigned finds no basis to exclude the testimony or laboratory results of the Government's expert DEA Senior Forensic Chemist Alan Randa. Accordingly, Defendant's motions to exclude his testimony and opinions [**Docs. 464 & 512**] are **DENIED**.

IT IS SO ORDERED.

ENTER:

Jill E. McCook
United States Magistrate Judge